

**Metallized Polyester (PET) Capacitors**  
**in PCM 7.5 mm to 52.5 mm. Capacitances from 1000 pF to 220 µF.**  
**Rated Voltages from 63 VDC to 2000 VDC.**

## Special Features

- High volume/capacitance ratio
- Self-healing
- AEC-Q200 qualified
- According to RoHS 2015/863/EU

## Typical Applications

For general DC-applications e.g.

- By-pass
- Blocking
- Coupling and decoupling
- Smoothing
- Timing

## Construction

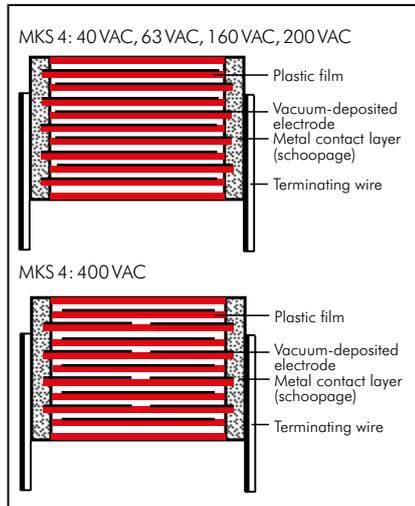
### Dielectric:

Polyethylene-terephthalate (PET) film

### Capacitor electrodes:

Vacuum-deposited

### Internal construction:



### Encapsulation:

Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0

### Terminations:

Tinned wire.

### Marking:

Colour: Red. Marking: Black.

## Electrical Data

**Capacitance range:** 1000 pF to 220 µF

**Rated voltages:** 63 VDC, 100 VDC, 250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1500 VDC, 2000 VDC

**Capacitance tolerances:**

± 20%, ± 10% ± 5%

**Operating temperature range:**

–55° C to +125° C

**Climatic test category:**

55/100/56 in accordance with IEC

**Test voltage:** 1.6 U<sub>r</sub>, 2 sec.

**Insulation resistance** at +20° C:

U <sub>r</sub>	U <sub>test</sub>	C ≤ 0.33 µF	0.33 µF < C ≤ 220 µF
63 VDC	50 V	≥ 1 x 10 <sup>4</sup> MΩ	≥ 3000 sec (MΩ x µF)
100 VDC	100 V	≥ 1.5 x 10 <sup>4</sup> MΩ	≥ 5000 sec (MΩ x µF)
≥ 250 VDC	100 V	≥ 3 x 10 <sup>4</sup> MΩ	≥ 10000 sec (MΩ x µF)

Measuring time: 1 min.

**Dissipation factors** at +20° C: tan δ

at f	C ≤ 0.1 µF	0.1 µF < C ≤ 1.0 µF	C > 1.0 µF
1 kHz	≤ 8 x 10 <sup>-3</sup>	≤ 8 x 10 <sup>-3</sup>	≤ 10 x 10 <sup>-3</sup>
10 kHz	≤ 15 x 10 <sup>-3</sup>	≤ 15 x 10 <sup>-3</sup>	–
100 kHz	≤ 30 x 10 <sup>-3</sup>	–	–

### Maximum pulse rise time:

Capacitance pF/µF	max. pulse rise time V/µsec							
	63VDC	100VDC	250VDC	400VDC	630VDC	1000VDC	1500VDC	2000VDC
1000 ... 6800	–	–	–	–	–	70	90	100
0.01 ... 0.022	–	30	35	38	40	50	50	60
0.033 ... 0.068	–	15	20	25	32	26	35	40
0.33 ... 0.68	10	12	15	15	17	20	35	40
0.1 ... 0.22	9	9	10	10	13	20	20	38
1.0 ... 2.2	6	5	6	9	13	14	15	15
3.3 ... 6.8	3	3	6	6	9	12	–	–
10 ... 22	2.5	2.5	3	6	6	–	–	–
33 ... 68	2.5	2.5	3	3	–	–	–	–
100 ... 220	2.5	2.5	–	–	–	–	–	–

## Mechanical Tests

### Pull test on pins:

d ≤ 0.8 Ø: 10 N in direction of pins

d > 0.8 Ø: 20 N in direction of pins

according to IEC 60068-2-21

**Vibration:** 6 hours at 10 ... 2000 Hz and 0.75 mm displacement amplitude or 10 g in accordance with IEC 60068-2-6

**Low air density:** 1 kPa = 10 mbar in accordance with IEC 60068-2-13

**Bump test:** 4000 bumps at 390 m/sec<sup>2</sup> in accordance with IEC 60068-2-29

## Packing

Available taped and reeled up to and including case size 15 x 26 x 31.5 / PCM 27.5 mm.

Detailed taping information and graphs at the end of the catalogue.

For further details and graphs please refer to Technical Information.

## Continuation

### General Data

Capacitance	63 VDC/40 VAC*					100 VDC/63 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF						2.5	7	10	7.5	MKS4D021002A_____
						4	9	13	10	MKS4D021003C_____
0.015 "						2.5	7	10	7.5	MKS4D021502A_____
						4	9	13	10	MKS4D021503C_____
0.022 "						2.5	7	10	7.5	MKS4D022202A_____
						4	9	13	10	MKS4D022203C_____
0.033 "						2.5	7	10	7.5	MKS4D023302A_____
						4	9	13	10	MKS4D023303C_____
0.047 "						2.5	7	10	7.5	MKS4D024702A_____
						4	9	13	10	MKS4D024703C_____
0.068 "						2.5	7	10	7.5	MKS4D026802A_____
						4	9	13	10	MKS4D026803C_____
0.1 µF	2.5	7	10	7.5	MKS4C031002A_____	2.5	7	10	7.5	MKS4D031002A_____
	4	9	13	10	MKS4C031003C_____	4	9	13	10	MKS4D031003C_____
0.15 "	2.5	7	10	7.5	MKS4C031502A_____	3	8.5	10	7.5	MKS4D031502B_____
	4	9	13	10	MKS4C031503C_____	4	9	13	10	MKS4D031503C_____
0.22 "	3	8.5	10	7.5	MKS4C032202B_____	4	9	10	7.5	MKS4D032202C_____
	4	9	13	10	MKS4C032203C_____	4	9	13	10	MKS4D032203C_____
0.33 "	4	9	10	7.5	MKS4C033302C_____	5	10.5	10.3	7.5	MKS4D033302E_____
	4	9	13	10	MKS4C033303C_____	4	9	13	10	MKS4D033303C_____
0.47 "	4	9	10	7.5	MKS4C034702C_____	5	10.5	10.3	7.5	MKS4D034702E_____
	4	9	13	10	MKS4C034703C_____	4	9	13	10	MKS4D034703C_____
0.68 "	5	10.5	10.3	7.5	MKS4C036802E_____	5.7	12.5	10.3	7.5	MKS4D036802F_____
	4	9	13	10	MKS4C036803C_____	5	11	13	10	MKS4D036803F_____
1.0 µF	5	10.5	10.3	7.5	MKS4C041002E_____	5.7	12.5	10.3	7.5	MKS4D041002F_____
	4	9	13	10	MKS4C041003C_____	5	11	13	10	MKS4D041003F_____
1.5 "	5.7	12.5	10.3	7.5	MKS4C041502F_____	6	12	13	10	MKS4D041503G_____
	5	11	13	10	MKS4C041503F_____	7	14	18	15	MKS4D041504D_____
2.2 "	5	11	13	10	MKS4C042203F_____	8	15	18	15	MKS4D042204F_____
	6	12.5	18	15	MKS4C042204C_____	6	15	26.5	22.5	MKS4D042205B_____
3.3 "	6	12	13	10	MKS4C043303G_____	9	16	18	15	MKS4D043304J_____
	7	14	18	15	MKS4C043304D_____	7	16.5	26.5	22.5	MKS4D043305D_____
4.7 "	7	14	18	15	MKS4C044704D_____	10.5	19	26.5	22.5	MKS4D044705G_____
	6	15	26.5	22.5	MKS4C044705B_____	9	19	31.5	27.5	MKS4D044706A_____
6.8 "	8	15	18	15	MKS4C046804F_____	10.5	19	26.5	22.5	MKS4D046805G_____
	7	16.5	26.5	22.5	MKS4C046805D_____	11	21	31.5	27.5	MKS4D046806B_____
10 µF	9	16	18	15	MKS4C051004J_____	11	21	31.5	27.5	MKS4D051006B_____
	8.5	18.5	26.5	22.5	MKS4C051005F_____					
15 "	11	21	26.5	22.5	MKS4C051505I_____	13	24	31.5	27.5	MKS4D051506D_____
	11	21	31.5	27.5	MKS4C051506B_____					
22 "	11	21	31.5	27.5	MKS4C052206B_____	13	24	31.5	27.5	MKS4D052206D_____
33 "	13	24	31.5	27.5	MKS4C053306D_____	17	29	31.5	27.5	MKS4D053306G_____
						13	24	41.5	37.5	MKS4D053307C_____
47 "	15	26	31.5	27.5	MKS4C054706F_____	17	34.5	31.5	27.5	MKS4D054706I_____
	13	24	41.5	37.5	MKS4C054707C_____	17	29	41.5	37.5	MKS4D054707E_____
68 "	17	34.5	31.5	27.5	MKS4C056806I_____	20	39.5	31.5	27.5	MKS4D056806J_____
	15	26	41.5	37.5	MKS4C056807D_____	19	32	41.5	37.5	MKS4D056807F_____
100 µF	20	39.5	31.5	27.5	MKS4C061006J_____	24	45.5	41.5	37.5	MKS4D061007H_____
	19	32	41.5	37.5	MKS4C061007F_____					
150 "	20	39.5	41.5	37.5	MKS4C061507G_____					
220 "	31	46	41.5	37.5	MKS4C062207I_____					

\* AC voltages:  $f = 50 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

■ New box sizes.

\*\* PCM = printed circuit module = pin spacing

Dims. in mm.

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## Continuation

### General Data

Capacitance	250 VDC/160 VAC*					400 VDC/200 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	3	8.5	10	7.5	MKS4F021002B	3	8.5	10	7.5	MKS4G021002B
	4	9	13	10	MKS4F021003C	4	9	13	10	MKS4G021003C
0.015 "	3	8.5	10	7.5	MKS4F021502B	3	8.5	10	7.5	MKS4G021502B
	4	9	13	10	MKS4F021503C	4	9	13	10	MKS4G021503C
0.022 "	3	8.5	10	7.5	MKS4F022202B	4	9	10	7.5	MKS4G022202C
	4	9	13	10	MKS4F022203C	4	9	13	10	MKS4G022203C
0.033 "	3	8.5	10	7.5	MKS4F023302B	4	9	10	7.5	MKS4G023302C
	4	9	13	10	MKS4F023303C	4	9	13	10	MKS4G023303C
0.047 "	3	8.5	10	7.5	MKS4F024702B	5	10.5	10.3	7.5	MKS4G024702E
	4	9	13	10	MKS4F024703C	4	9	13	10	MKS4G024703C
0.068 "	4	9	10	7.5	MKS4F026802C	5	10.5	10.3	7.5	MKS4G026802E
	4	9	13	10	MKS4F026803C	4	9	13	10	MKS4G026803C
0.1 µF	4	9	10	7.5	MKS4F031002C	5	10.5	10.3	7.5	MKS4G031002E
	4	9	13	10	MKS4F031003C	5	11	13	10	MKS4G031003F
0.15 "	5	10.5	10.3	7.5	MKS4F031502E	5.7	12.5	10.3	7.5	MKS4G031502F
	4	9	13	10	MKS4F031503C	6	12	13	10	MKS4G031503G
0.22 "	5	10.5	10.3	7.5	MKS4F032202E	6	12	13	10	MKS4G032203G
	5	11	13	10	MKS4F032203F	6	12.5	18	15	MKS4G032204C
0.33 "	5.7	12.5	10.3	7.5	MKS4F033302F	8	15	18	15	MKS4G033304F
	5	11	13	10	MKS4F033303F					
0.47 "	6	12	13	10	MKS4F034703G	8	15	18	15	MKS4G034704F
	6	12.5	18	15	MKS4F034704C	6	15	26.5	22.5	MKS4G034705B
0.68 "	7	14	18	15	MKS4F036804D	7	16.5	26.5	22.5	MKS4G036805D
1.0 µF	8	15	18	15	MKS4F041004F	10.5	19	26.5	22.5	MKS4G041005G
	6	15	26.5	22.5	MKS4F041005B	11	21	31.5	27.5	MKS4G041006B
1.5 "	9	16	18	15	MKS4F041504J	11	21	26.5	22.5	MKS4G041505I
	7	16.5	26.5	22.5	MKS4F041505D	11	21	31.5	27.5	MKS4G041506B
2.2 "	10.5	19	26.5	22.5	MKS4F042205G	11	21	31.5	27.5	MKS4G042206B
	9	19	31.5	27.5	MKS4F042206A					
3.3 "	11	21	26.5	22.5	MKS4F043305I	13	24	31.5	27.5	MKS4G043306D
	11	21	31.5	27.5	MKS4F043306B					
4.7 "	11	21	31.5	27.5	MKS4F044706B	17	29	31.5	27.5	MKS4G044706G
6.8 "	13	24	31.5	27.5	MKS4F046806D	17	34.5	31.5	27.5	MKS4G046806I
						15	26	41.5	37.5	MKS4G046807D
10 µF	17	29	31.5	27.5	MKS4F051006G	19	32	41.5	37.5	MKS4G051007F
15 "	15	26	41.5	37.5	MKS4F051007D					
	17	34.5	31.5	27.5	MKS4F051506I	20	39.5	41.5	37.5	MKS4G051507G
22 "	17	29	41.5	37.5	MKS4F051507E					
33 "	20	39.5	41.5	37.5	MKS4F052207G	31	46	41.5	37.5	MKS4G052207I
47 "	24	45.5	41.5	37.5	MKS4F053307H	35	50	41.5	37.5	MKS4G053307J
	31	46	41.5	37.5	MKS4F054707I					

\* AC voltage:  $f = 50 \text{ Hz}; 1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

\*\*PCM = printed circuit module = pin spacing

Dims. in mm.

Part number completion:	
Version code:	2-pin = 00 4-pin = D4
Tolerance:	20 % = M 10 % = K 5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 133	

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## Continuation

### General Data

Capacitance	630 VDC/400 VAC*					1000 VDC/400 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF						3	8.5	10	7.5	MKS4O111002B
1500 "						4	9	13	10	MKS4O111003C
2200 "						3	8.5	10	7.5	MKS4O111502B
3300 "						4	9	13	10	MKS4O111503C
4700 "						3	8.5	10	7.5	MKS4O112202B
6800 "						4	9	13	10	MKS4O112203C
						4	9	10	7.5	MKS4O113302C
						4	9	13	10	MKS4O113303C
						4	9	10	7.5	MKS4O114702C
						4	9	13	10	MKS4O114703C
						4.5	9.5	10.3	7.5	MKS4O116802D
						4	9	13	10	MKS4O116803C
0.01 µF	3	8.5	10	7.5*	MKS4J021002B	5	10.5	10.3	7.5	MKS4O121002E
	4	9	13	10	MKS4J021003C	5	11	13	10	MKS4O121003F
0.015 "	4	9	10	7.5*	MKS4J021502C	5.7	12.5	10.3	7.5	MKS4O121502F
	4	9	13	10	MKS4J021503C	6	12	13	10	MKS4O121503G
0.022 "	4.5	9.5	10.3	7.5*	MKS4J022202D	5	11	18	15	MKS4O122204B
	4	9	13	10	MKS4J022203C					
0.033 "	5	10.5	10.3	7.5*	MKS4J023302E	6	12.5	18	15	MKS4O123304C
	5	11	13	10	MKS4J023303F	6	15	26.5	22.5	MKS4O123305B
0.047 "	5.7	12.5	10.3	7.5*	MKS4J024702F	7	14	18	15	MKS4O124704D
	6	12	13	10	MKS4J024703G	6	15	26.5	22.5	MKS4O124705B
0.068 "	6	12	13	10	MKS4J026803G	8	15	18	15	MKS4O126804F
	5	11	18	15	MKS4J026804B	6	15	26.5	22.5	MKS4O126805B
0.1 µF	6	12.5	18	15	MKS4J031004C	9	16	18	15	MKS4O131004J
	6	15	26.5	22.5	MKS4J031005B	7	16.5	26.5	22.5	MKS4O131005D
0.15 "	7	14	18	15	MKS4J031504D	8.5	18.5	26.5	22.5	MKS4O131505F
	6	15	26.5	22.5	MKS4J031505B					
0.22 "	8	15	18	15	MKS4J032204F	10.5	19	26.5	22.5	MKS4O132205G
	6	15	26.5	22.5	MKS4J032205B					
0.33 "	7	16.5	26.5	22.5	MKS4J033305D	11	21	26.5	22.5	MKS4O133305I
	9	19	31.5	27.5	MKS4J033306A	11	21	31.5	27.5	MKS4O133306B
0.47 "	10.5	19	26.5	22.5	MKS4J034705G	13	24	31.5	27.5	MKS4O134706D
	9	19	31.5	27.5	MKS4J034706A					
0.68 "	11	21	26.5	22.5	MKS4J036805I	15	26	31.5	27.5	MKS4O136806F
	11	21	31.5	27.5	MKS4J036806B					
1.0 µF	11	21	31.5	27.5	MKS4J041006B	17	29	31.5	27.5	MKS4O141006G
						17	29	41.5	37.5	MKS4O141007E
1.5 "	15	26	31.5	27.5	MKS4J041506F	19	32	41.5	37.5	MKS4O141507F
2.2 "	17	34.5	31.5	27.5	MKS4J042206I	20	39.5	41.5	37.5	MKS4O142207G
	15	26	41.5	37.5	MKS4J042207D					
3.3 "	20	39.5	31.5	27.5	MKS4J043306J	24	45.5	41.5	37.5	MKS4O143307H
	19	32	41.5	37.5	MKS4J043307F					
4.7 "	20	39.5	41.5	37.5	MKS4J044707G	35	50	41.5	37.5	MKS4O144707J
6.8 "	24	45.5	41.5	37.5	MKS4J046807H	40	55	41.5	37.5	MKS4O146807K
						35	50	57	52.5	MKS4O146809F
10 µF	35	50	41.5	37.5	MKS4J051007J					
15 "	40	55	41.5	37.5	MKS4J051507K					

\* AC voltage:  $f = 50 \text{ Hz}; 1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

\*\* PCM = printed circuit module = pin spacing

\* Admissible AC voltage 250 VAC max.

Dims. in mm.

Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 133	

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## Continuation

### General Data

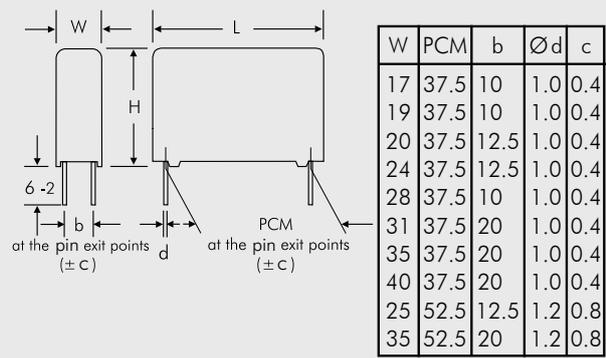
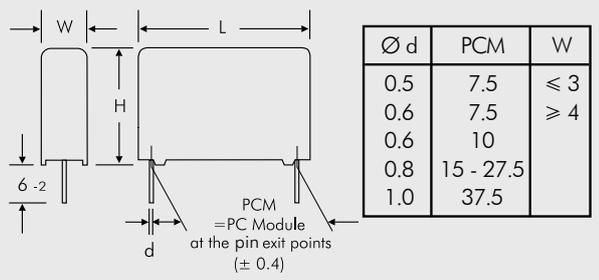
Capacitance	1500 VDC/400 VAC*					2000 VDC/400 VAC*					
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number	
1000 pF	4	9	13	10	MKS4S011003C	4	9	13	10	MKS4U011003C	
1500 "	4	9	13	10	MKS4S011503C	4	9	13	10	MKS4U011503C	
2200 "	4	9	13	10	MKS4S012203C	5	11	13	10	MKS4U012203F	
3300 "	4	9	13	10	MKS4S013303C	6	12	13	10	MKS4U013303G	
4700 "	4	9	13	10	MKS4S014703C	5	11	18	15	MKS4U013304B	
	5	11	18	15	MKS4S014704B	5	11	18	15	MKS4U014704B	
6800 "	5	11	13	10	MKS4S016803F	6	12.5	18	15	MKS4U016804C	
	5	11	18	15	MKS4S016804B						
0.01 µF	6	12	13	10	MKS4S021003G	7	14	18	15	MKS4U021004D	
	5	11	18	15	MKS4S021004B	6	15	26.5	22.5	MKS4U021005B	
0.015 "	6	12.5	18	15	MKS4S021504C	6	15	26.5	22.5	MKS4U021505B	
0.022 "	7	14	18	15	MKS4S022204D	7	16.5	26.5	22.5	MKS4U022205D	
	6	15	26.5	22.5	MKS4S022205B						
0.033 "	8	15	18	15	MKS4S023304F	10.5	19	26.5	22.5	MKS4U023305G	
	6	15	26.5	22.5	MKS4S023305B						
0.047 "	7	16.5	26.5	22.5	MKS4S024705D	11	21	26.5	22.5	MKS4U024705I	
	0.068 "	8.5	18.5	26.5	22.5	MKS4S026805F	11	21	31.5	27.5	MKS4U024706B
11							21	31.5	27.5	MKS4U026806B	
0.1 µF	10.5	19	26.5	22.5	MKS4S031005G	13	24	31.5	27.5	MKS4U031006D	
	9	19	31.5	27.5	MKS4S031006A						
0.15 "	11	21	31.5	27.5	MKS4S031506B	17	29	31.5	27.5	MKS4U031506G	
	0.22 "	13	24	31.5	27.5	MKS4S032206D	13	24	41.5	37.5	MKS4U031507C
17							29	41.5	37.5	MKS4U032207E	
0.33 "	17	34.5	31.5	27.5	MKS4S033306I	20	39.5	41.5	37.5	MKS4U033307G	
											17
0.47 "	20	39.5	31.5	27.5	MKS4S034706J	24	45.5	41.5	37.5	MKS4U034707H	
	17	29	41.5	37.5	MKS4S034707E						
0.68 "	20	39.5	41.5	37.5	MKS4S036807G	31	46	41.5	37.5	MKS4U036807I	
	20	39.5	41.5	37.5	MKS4S036807G						
1.0 µF	24	45.5	41.5	37.5	MKS4S041007H	40	55	41.5	37.5	MKS4U041007K	
	1.5 "	31	46	41.5	37.5	MKS4S041507I	25	45	57	52.5	MKS4U041009D
2.2 "							35	50	41.5	37.5	MKS4S042207J

Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 133	

\* AC voltage:  
 $f = 50 \text{ Hz}; 1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

\*\* PCM = printed circuit module = pin spacing

Dims. in mm.



Rights reserved to amend design data without prior notification.



## Recommendation for Processing and Application of Through-Hole Capacitors

### Soldering Process

Internal temperature of the capacitor must be kept as follows:

Polyester: preheating:  $T_{max.} \leq 125^{\circ} C$   
 soldering:  $T_{max.} \leq 135^{\circ} C$

Polypropylene: preheating:  $T_{max.} \leq 100^{\circ} C$   
 soldering:  $T_{max.} \leq 110^{\circ} C$

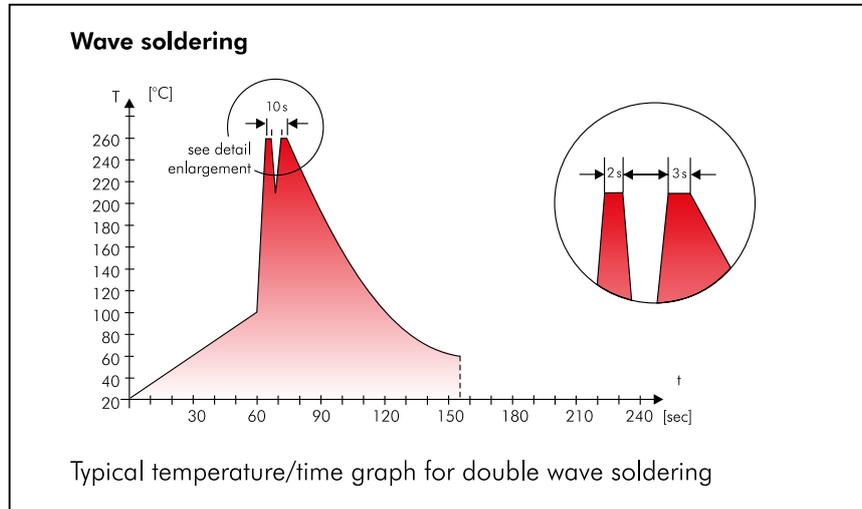
#### Single wave soldering

Soldering bath temperature:  $T < 260^{\circ} C$   
 Dwell time:  $t < 5 \text{ sec}$

#### Double wave soldering

Soldering bath temperature:  $T < 260^{\circ} C$   
 Dwell time:  $\sum t < 5 \text{ sec}$

Due to different soldering processes and heat requirements the graphs are to be regarded as a recommendation only.



## WIMA Quality and Environmental Philosophy

### ISO 9001:2015 Certification

ISO 9001:2015 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2015 of our factories certifies that organisation, equipment and monitoring of quality assurance in our factories correspond to internationally recognized standards.

### WIMA WPCS

The WIMA Process Control System (WPCS) is a quality surveillance and optimization system developed by WIMA. WPCS is a major part of the quality-oriented WIMA production. Points of application during production process:

- incoming material inspection
- metallization
- film inspection
- schoopage
- pre-healing
- pin attachment
- cast resin preparation/encapsulation
- 100% final inspection
- Testing as per customer requirements

### WIMA Environmental Policy

All WIMA capacitors, irrespective of whether through-hole devices or SMD, are made of environmentally friendly materials. Neither during manufacture nor in the product itself any toxic substances are used, e.g.

- Lead
- PCB
- CFC
- Hydrocarbon chloride
- Chromium 6+
- PBB/PBDE
- Arsenic
- Cadmium
- Mercury
- etc.

We merely use pure, recyclable materials for packing our components, such as:

- carton
- cardboard
- adhesive tape made of paper
- polystyrene

We almost completely refrain from using packing materials such as:

- adhesive tapes made of plastic
- metal clips

### RoHS Compliance

According to the RoHS Directive 2015/863/EU as amended from time to time certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has re-frained from using such substances since years already.



WIMA Kondensatoren sind bleifrei konform RoHS 2015/863/EU  
 WIMA capacitors are lead free in accordance with RoHS 2015/863/EU

Tape for lead-free WIMA capacitors

### DIN EN ISO 14001:2004

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2004 to optimize the production processes with regard to energy and resources.

# Typical Dimensions for Taping Configuration

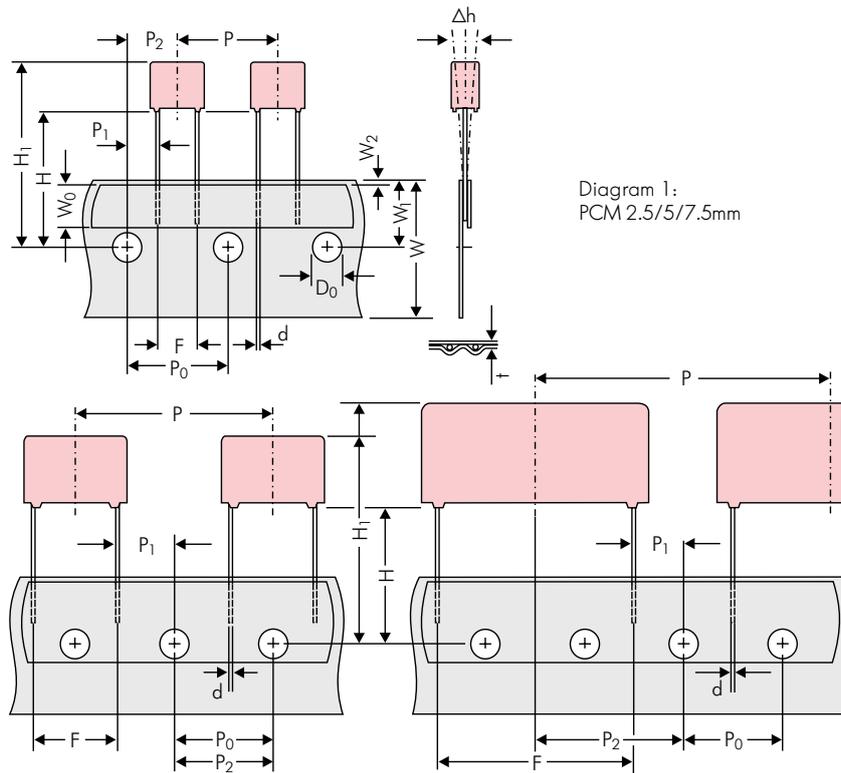


Diagram 1:  
PCM 2.5/5/7.5mm

Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5\*mm

\*PCM 27.5 tapping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 tapping	PCM 5 tapping	PCM 7.5 tapping	PCM 10 tapping*	PCM 15 tapping*	PCM 22.5 tapping	PCM 27.5 tapping
Carrier tape width	W	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5
Hold-down tape width	W <sub>0</sub>	6.0 for hot-sealing adhesive tape	6.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape
Hole position	W <sub>1</sub>	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5
Hold-down tape position	W <sub>2</sub>	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.
Feed hole diameter	D <sub>0</sub>	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2
Pitch of component	P	12.7 ±1.0	12.7 ±1.0	12.7 ±1.0	25.4 ±1.0	25.4 ±1.0	38.1 ±1.5	*38.1 ±1.5 or 50.8 ±1.5
Feed hole pitch	P <sub>0</sub>	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch
Feed hole centre to pin	P <sub>1</sub>	5.1 ±0.5	3.85 ±0.7	2.6 ±0.7	7.7 ±0.7	5.2 ±0.7	7.8 ±0.7	5.3 ±0.7
Hole centre to component centre	P <sub>2</sub>	6.35 ±1.3	6.35 ±1.3	6.35 ±1.3	12.7 ±1.3	12.7 ±1.3	19.05 ±1.3	19.05 ±1.3
Feed hole centre to bottom edge of the component	H <sub>▲</sub>	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5
Feed hole centre to top edge of the component	H <sub>1</sub>	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 24.5 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 25.0 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 26.0 to 37.0	H+H <sub>component</sub> < H <sub>1</sub> 30.0 to 43.0	H+H <sub>component</sub> < H <sub>1</sub> 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 <sup>+0.8</sup> <sub>-0.2</sub>	7.5 ±0.8	10.0 ±0.8	15 ±0.8	22.5 ±0.8	27.5 ±0.8
Pin diameter	d	0.4 ±0.05	0.5 ±0.05	*0.5 ±0.05 or 0.6 <sup>+0.06</sup> <sub>-0.05</sub>	*0.5 ±0.05 or 0.6 <sup>+0.06</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>
Component alignment	Δh	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2
Package (see also page 134)	▲	ROLL/AMMO			AMMO			
		REEL Ø 360 max. Ø 30 ±1	B 52 ±2 58 ±2	depending on comp. dimensions	REEL Ø 360 max. Ø 30 ±1	B 52 ±2 58 ±2 66 ±2	or REEL Ø 500 max. Ø 25 ±1	B 54 ±2 60 ±2 68 ±2
Unit		see details page 135.						

▲ When ordering please specify dimension H and required packaging type.

Dims in mm.

• Diameter of pins see General Data.

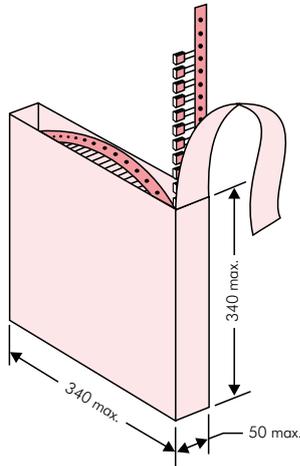
Please clarify customer-specific deviations with the manufacturer.

\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

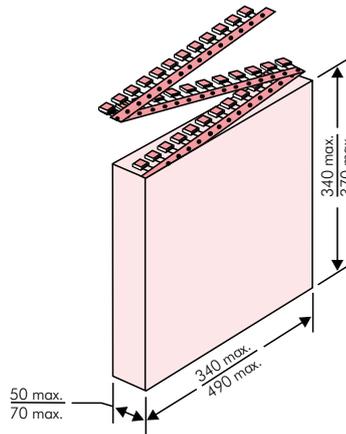
Position of components according to PCM 7.5 (sketch 1). P<sub>0</sub> = 12.7 or 15.0 is possible

## Types of Tape Packaging of Capacitors for Automatic Radial Insertion

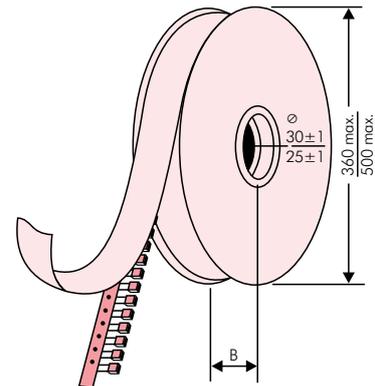
### ■ ROLL Packaging



### ■ AMMO Packaging



### ■ REEL Packaging



## BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumeric Bar Code

- WIMA supplier number
- Date code
- Customer's P/O number
- P/O line
- Customer's part number
- WIMA part number
- Quantity
- WIMA confirmation number
- Country of origin
- Customer name
- Handling unit number
- Week of delivery.

In addition part description of

- article
- capacitance value
- rated voltage
- dimensions
- technical note
- capacitance tolerance
- packing
- connecting information

BARCODE PDF417  
BARCODE 2D Datamatrix

**WIMA** Best Capacitors Made in Germany  
Werk Aurich

Supplier-ID: LIEF.NR.	Date Code: 20210419
Purchase Order No. (P/O): Bestellung xyz	P/O line: 100
Customer Part No.: KUNDENTEILENUMMER	
WIMA Part No.: MKP1F041006B00KSSD	Quantity: 459
WIMA Confirmation No.: 0001105072000100	RoHS 2011/65/EU
	COO: DE
Customer No.: 0000100002	
Gross Weight [g]: 4557	
WIMA – MKP 10	WIMA Part No.: MKP1F041006B00KSSD
MKP 10 1.0 µF 250 VDC 11x21x31.5 RM27.5	
Standard 10% Lose – Standard Drähte 6–2	
Vorlage Debitor Inland	
	0001105072000100
1002021443	QTY: 459 Week 19/2021

## Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 22.5 mm



PCM	Size				bulk	pcs. per packing unit									
						ROLL		REEL				AMMO			
	W	H	L	Codes		S	N	O	Ø 360		Ø 500		340 x 340		490 x 370
								F	I	H	J	A	C	B	D
<b>2.5 mm</b>	2.5	7	4.6	<b>0B</b>	5000		2200	2500		-		2800		-	
	3	7.5	4.6	<b>0C</b>	5000		2000	2300		-		2300		-	
	3.8	8.5	4.6	<b>0D</b>	5000		1500	1800		-		1800		-	
	4.6	9	4.6	<b>0E</b>	5000		1200	1500		-		1500		-	
	5.5	10	4.6	<b>0F</b>	5000		900	1200		-		1200		-	
<b>5 mm</b>	2.5	6.5	7.2	<b>1A</b>	5000		2200	2500		-		2800		-	
	3	7.5	7.2	<b>1B</b>	5000		2000	2300		-		2300		-	
	3.5	8.5	7.2	<b>1C</b>	5000		1600	2000		-		2000		-	
	4.5	6	7.2	<b>1D</b>	6000		1300	1500		-		1500		-	
	4.5	9.5	7.2	<b>1E</b>	4000		1300	1500		-		1500		-	
	5	10	7.2	<b>1F</b>	3500		1100	1400		-		1400		-	
	5.5	7	7.2	<b>1G</b>	4000		1000	1200		-		1200		-	
	5.5	11.5	7.2	<b>1H</b>	2500		1000	1200		-		1200		-	
	6.5	8	7.2	<b>1I</b>	2500		800	1000		-		1000		-	
	7.2	8.5	7.2	<b>1J</b>	2500		700	1000		-		1000		-	
	7.2	13	7.2	<b>1K</b>	2000		700	950		-		1000		-	
	8.5	10	7.2	<b>1L</b>	2000		600	800		-		800		-	
	8.5	14	7.2	<b>1M</b>	1500		600	800		-		800		-	
11	16	7.2	<b>1N</b>	1000		500	600		-		640		-		
11	18	7.2	<b>1O</b>	1000		500	600		-		640		-		
<b>7.5 mm</b>	2.5	7	10	<b>2A</b>	5000		-	2500		4400		2500		-	
	3	8.5	10	<b>2B</b>	5000		-	2200		4300		2300		4150	
	4	9	10	<b>2C</b>	4000		-	1700		3200		1700		3000	
	4.5	9.5	10.3	<b>2D</b>	3500		-	1500		2900		1400		2700	
	5	10.5	10.3	<b>2E</b>	3000		-	1300		2500		1300		-	
	5.7	12.5	10.3	<b>2F</b>	2000		-	1000		2200		1100		-	
	7.2	12.5	10.3	<b>2G</b>	1500		-	900		1800		1000		-	
<b>10 mm</b>	4	9	13	<b>3C</b>	3000		-	900		1600		-		1450	
	4	9.5	13	<b>3D</b>	3000		-	900		1600		-		1400	
	5	11	13	<b>3F</b>	3000		-	700		1300		-		1100	
	6	12	13	<b>3G</b>	2400		-	550		1100		-		1000	
	6	12.5	13	<b>3H</b>	2400		-	550		1100		-		1000	
	8	12	13	<b>3I</b>	2000		-	400		800		-		740	
<b>15 mm</b>	5	11	18	<b>4B</b>	2400		-	600		1200		-		1150	
	6	12.5	18	<b>4C</b>	2000		-	500		1000		-		1000	
	7	14	18	<b>4D</b>	1600		-	450		900		-		850	
	8	15	18	<b>4F</b>	1200		-	400		800		-		740	
	9	14	18	<b>4H</b>	1200		-	350		700		-		650	
	9	16	18	<b>4J</b>	900		-	350		700		-		650	
	11	14	18	<b>4M</b>	1000		-	300		600		-		540	
<b>22.5 mm</b>	5	14	26.5	<b>5A</b>	1200		-	-		800		-		770	
	6	15	26.5	<b>5B</b>	1000		-	-		700		-		640	
	7	16.5	26.5	<b>5D</b>	760		-	-		600		-		550	
	8.5	18.5	26.5	<b>5F</b>	500		-	-		480		-		450	
	10.5	19	26.5	<b>5G</b>	594*		-	-		400		-		360	
	10.5	20.5	26.5	<b>5H</b>	594*		-	-		400		-		360	
	11	21	26.5	<b>5I</b>	561*		-	-		380		-		350	

\* for 2-inch transport pitches.

\* TPS (Tray-Packing-System). Plate versions may have different packing units. Samples and pre-production needs on request.

Rights reserved to amend design data without prior notification.



## Packing Quantities for Capacitors with Radial Pins in PCM 27.5 mm to 52.5 mm

PCM	Size				bulk	pcs. per packing unit										
						ROLL		REEL				AMMO				
	W	H	L	Codes		S	N	O	Ø 360		Ø 500		340 x 340		490 x 370	
							H16.5	H18.5	H16.5	H18.5	H16.5	H18.5	H16.5	H18.5	H16.5	H18.5
							F	I	H	J	A	C	B	D		
<b>27.5 mm</b>	9	19	31.5	<b>6A</b>	567*	-	-	-	-	460/340*	-	-	-	-		
	11	21	31.5	<b>6B</b>	459*	-	-	-	-	380/280*	-	-	-	-		
	13	24	31.5	<b>6D</b>	378*	-	-	-	-	300	-	-	-	-		
	15	26	31.5	<b>6F</b>	324*	-	-	-	-	270	-	-	-	-		
	17	29	31.5	<b>6G</b>	198*	-	-	-	-	-	-	-	-	-		
	17	34.5	31.5	<b>6I</b>	198*	-	-	-	-	-	-	-	-	-		
	20	39.5	31.5	<b>6J</b>	162*	-	-	-	-	-	-	-	-	-		
<b>37.5 mm**</b>	9	19	41.5	<b>7A</b>	441*	-	-	-	-	-	-	-	-			
	11	22	41.5	<b>7B</b>	357*	-	-	-	-	-	-	-	-			
	13	24	41.5	<b>7C</b>	294*	-	-	-	-	-	-	-	-			
	15	26	41.5	<b>7D</b>	252*	-	-	-	-	-	-	-	-			
	17	29	41.5	<b>7E</b>	154*	-	-	-	-	-	-	-	-			
	19	32	41.5	<b>7F</b>	140*	-	-	-	-	-	-	-	-			
	20	39.5	41.5	<b>7G</b>	126*	-	-	-	-	-	-	-	-			
	24	45.5	41.5	<b>7H</b>	112*	-	-	-	-	-	-	-	-			
	28	38	41.5	<b>7L</b>	84*	-	-	-	-	-	-	-	-			
	31	46	41.5	<b>7I</b>	84*	-	-	-	-	-	-	-	-			
	35	50	41.5	<b>7J</b>	35*	-	-	-	-	-	-	-	-			
40	55	41.5	<b>7K</b>	28*	-	-	-	-	-	-	-	-				
<b>48.5 mm**</b>	19	31	56	<b>8D</b>	120*	-	-	-	-	-	-	-	-			
	23	34	56	<b>8E</b>	80*	-	-	-	-	-	-	-	-			
	27	37.5	56	<b>8H</b>	84*	-	-	-	-	-	-	-	-			
	33	48	56	<b>8J</b>	25*	-	-	-	-	-	-	-	-			
	37	54	56	<b>8L</b>	25*	-	-	-	-	-	-	-	-			
<b>52.5 mm</b>	25	45	57	<b>9D</b>	70*	-	-	-	-	-	-	-	-			
	30	45	57	<b>9E</b>	60*	-	-	-	-	-	-	-	-			
	35	50	57	<b>9F</b>	25*	-	-	-	-	-	-	-	-			
	45	55	57	<b>9H</b>	20*	-	-	-	-	-	-	-	-			
	45	65	57	<b>9J</b>	20*	-	-	-	-	-	-	-	-			

\* TPS (Tray-Packing-System). Plate versions may have different packing units.

Rights reserved to amend design data without prior notification.

\*\*For Snubber capacitors in 2-pin version the PCM is changing to 38.5 respective 49.5 mm. Samples and pre-production needs on request.

Updated data on [www.wima.com](http://www.wima.com)



A WIMA part number consists of 18 digits and is composed as follows:

- Field 1 - 4: Type description
- Field 5 - 6: Rated voltage
- Field 7 -10: Capacitance
- Field 11 -12: Size and PCM
- Field 13 -14: Version code (e.g. Snubber versions)
- Field 15: Capacitance tolerance
- Field 16: Packing
- Field 17 -18: Pin length (untaped)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2			-		20%	bulk	6 -2	

<p><b>Type description:</b></p> <p>SMD-PET = SMDT  SMD-PPS = SMDI  MKS 02 = MKS0  FKS 2 = FKS2  FKP 2 = FKP2  MKS 2 = MKS2  MKP 2 = MKP2  MKS 4 = MKS4  MKP 4 = MKP4  MKP 10 = MKP1  FKP 1 = FKP1  MKP-X2 = MKX2  MKP-X1 R = MKX1  MKP-Y2 = MKY2  Snubber MKP = SNMP  Snubber FKP = SNFP  GTO MKP = GTOM  DC-LINK MKP 4 = DCP4  DC-LINK MKP 6 = DCP6  DC-LINK HC = DCHC</p>	<p><b>Rated voltage:</b></p> <p>63 VDC = C0  100 VDC = D0  250 VDC = F0  400 VDC = G0  450 VDC = H0  520 VDC = H2  600 VDC = I0  630 VDC = J0  700 VDC = K0  800 VDC = L0  850 VDC = M0  900 VDC = N0  1000 VDC = O1  1100 VDC = P0  1200 VDC = Q0  1250 VDC = R0  1500 VDC = S0  1600 VDC = T0  1700 VDC = TA  2000 VDC = U0  2500 VDC = V0  3000 VDC = W0  4000 VDC = X0  6000 VDC = Y0  230 VAC = 3Y  275 VAC = 1W  300 VAC = 2W  305 VAC = AW  350 VAC = BW  440 VAC = 4W  ...</p>	<p><b>Capacitance:</b></p> <p>22 pF = 0022  47 pF = 0047  100 pF = 0100  150 pF = 0150  220 pF = 0220  330 pF = 0330  470 pF = 0470  680 pF = 0680  1000 pF = 1100  1500 pF = 1150  2200 pF = 1220  3300 pF = 1330  4700 pF = 1470  6800 pF = 1680  0.01 µF = 2100  0.022 µF = 2220  0.047 µF = 2470  0.1 µF = 3100  0.22 µF = 3220  0.47 µF = 3470  1 µF = 4100  2.2 µF = 4220  4.7 µF = 4470  10 µF = 5100  22 µF = 5220  47 µF = 5470  100 µF = 6100  220 µF = 6220  1000 µF = 7100  1500 µF = 7150  ...</p>	<p><b>Size:</b></p> <p>4.8x3.3x3 Size 1812 = KA  4.8x3.3x4 Size 1812 = KB  5.7x5.1x3.5 Size 2220 = QA  5.7x5.1x4.5 Size 2220 = QB  7.2x6.1x3 Size 2824 = TA  7.2x6.1x5 Size 2824 = TB  10.2x7.6x5 Size 4030 = VA  12.7x10.2x6 Size 5040 = XA  15.3x13.7x7 Size 6054 = YA  2.5x7x4.6 PCM2.5 = 0B  3x7.5x4.6 PCM2.5 = 0C  2.5x6.5x7.2 PCM5 = 1A  3x7.5x7.2 PCM5 = 1B  2.5x7x10 PCM7.5 = 2A  3x8.5x10 PCM7.5 = 2B  3x9x13 PCM10 = 3A  4x9x13 PCM10 = 3C  5x11x18 PCM15 = 4B  6x12.5x18 PCM15 = 4C  5x14x26.5 PCM22.5 = 5A  6x15x26.5 PCM22.5 = 5B  9x19x31.5 PCM27.5 = 6A  11x21x31.5 PCM27.5 = 6B  9x19x41.5 PCM37.5 = 7A  11x22x41.5 PCM37.5 = 7B  19x31x56 PCM 48.5 = 8D  25x45x57 PCM 52.5 = 9D  ...</p>	<p><b>Tolerance:</b></p> <p>±20% = M  ±10% = K  ±5% = J  ±2.5% = H  ±1% = E  ...</p> <p><b>Packing:</b></p> <p>AMMO H16.5 340x340 = A  AMMO H16.5 490x370 = B  AMMO H18.5 340x340 = C  AMMO H18.5 490x370 = D  REEL H16.5 360 = F  REEL H16.5 500 = H  REEL H18.5 360 = I  REEL H18.5 500 = J  ROLL H16.5 = N  ROLL H18.5 = O  BLISTER W12 180 = P  BLISTER W12 330 = Q  BLISTER W16 330 = R  BLISTER W24 330 = T  Bulk/TPS Standard = S  ...</p>	
				<p><b>Version code:</b></p> <p>Standard = 00  Version A1 = 1A  Version A1.1.1 = 1B  Version A2 = 2A  ...</p>	<p><b>Pin length (untaped)</b></p> <p>3.5 ±0.5 = C9  6 -2 = SD  16 ±1 = P1  ...  <b>Pin length (taped)</b>  none = 00</p>

The data on this page is not complete and serves only to explain the part number system. Part number information is listed on the pages of the respective WIMA range.